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La Lengua del Oyente: Some Effects of Listener Language on Spanish-Speaking Preschoolers' Verbal Behavior

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La Lengua del Oyente: Some Effects of Listener Language
on Spanish-Speaking Preschoolers' Verbal Behavior

by

Gerardo Castillo II

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts
Applied Behavior Analysis
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University of South Florida

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ABSTRACT

Bilingual children represent a large population of preschool and school-aged children in the United States. Challenges may arise when the verbal community in which a child spends most of his or her time does not reinforce his or her primary language. Previous research has shown that children adjust their language to match the language of their listener (Genesee, Boivin, & Nicoladis, 1996). It is possible that having a native-language communication partner at school would improve child engagement, as measured by child mean length of utterance and quantity of child initiations. The purpose of this study is to examine whether listener language has an effect on number of child initiations and mean length of utterance. A secondary purpose is to replicate and extend previous research on children matching their language to that of their listener in Spanish-speaking preschoolers. Four preschoolers who were exposed to Spanish at home and English in their instructional setting were recruited. Their language proficiency was assessed with the preLAS and they were exposed to Spanish-speaking communication partners and English-speaking communication partners in a multielement design. Results suggest that the language of the listener had implications for amount of child initiations and mean length of utterance. This was not always predicted by the language proficiency assessment. Also, children were more likely to use their dominant language in the non-dominant language context than use the non-dominant language in the dominant language context. These results may have implications for best practices in educational settings for Spanish-speaking preschoolers.

CHAPTER ONE:

INTRODUCTION

The population of bilingual children is growing rapidly in the United States. The U.S. Census Bureau reports about 21% of school age children speaking another language aside from English at home (Ryan, 2013). In 2000, it was estimated that 24% of children enrolled in Head Start programs spoke a language at home other than English (Brooks, 2000). According to the Department of Education, 79% of bilingual children and English Language Learners (ELL) speak Spanish at home as their second language (National Center for Education Statistics, 2008). In the southern United States, it is estimated that this rate grew approximately 300 to 400% from 1998 to 2008 (Espinosa, 2008). Although this population keeps growing, gaps remain in research on, and accommodations for, these individuals.

One subset of this population is circumstantial bilinguals. Circumstantial bilinguals are those who typically move into a new area of residence (e.g. new country or city) and do not speak the common language shared by that community. In order to adapt and survive they learn this new language in hopes of acculturation. Acculturation could be expressed as adjusting one's behavior to access the reinforcing contingencies in the environment. Due to these circumstances, it is necessary for them to adopt this language to function in their new environment effectively (Baker, 2001). However this process is not an easy one, as learning another language may prove difficult. The children of circumstantial bilinguals may be learning English at school but speaking Spanish in the home, and may face challenges during this process, especially if the home language is not supported at school, some bigger educational issues may arise.

Some of these issues may result in placement in special education. Harry and Klingner (2006) report that ELLs are over represented in special education, particularly those subgroups that have the lowest fluency in English. Most misplacement of bilingual children in special education is due to inadequate assessment, lack of staff who can competently conduct bilingual evaluations, and who usually do not take into account other variables which may have an effect on student language proficiency and subsequent placement in special education (Harry & Klingner, 2006) These other variables may include a family's social economic status (SES), assessment procedures, and referral bias (Artiles & Klingner, 2006). When a dual language learner (DLL) child enters the public school system, he or she may lack the academic foundation necessary for success such as grammatical knowledge, linguistic skills in the prominent language, and learning styles promoted in schools from an early age (Kohnert et al., 2005). This idea is supported by the nearly 50% of Latino children identified to read below grade level in fourth grade. Furthermore, 81% of these children could not read proficiently in English according to the National Assessment of Educational Progress based on a criterion of basic, proficient or advanced (NAEP, 2011). In addition, as of 2008, 11.3% of all students K-12 in the United States received an Individualized Education Plan (IEP) simply due to the fact that they were Limited English Proficient (LEP) and no other significant language or developmental delays (National Center for Education Statistics, 2008). Harry and Klingner (2006) say the process for identifying children for referral to special education is anything but scientific. Rather, some education professionals succumb to social forces to refer to special education DLLs who challenge general educators.

Standardized testing in the mainstream language may be one reason bilingual children may have poor educational outcomes (Peña, Gillam, Bedore, & Bohman, 2011). Problems arise

when the scores of such standardized tests are not representative of their actual skill set, because their knowledge and comprehension is distributed across two languages (Paradis, Genesse, & Crago, 2011). These standardized tests are being compared to those of monolingual children (Peña et al., 2011; Petersen & Gillam, 2013). Often, standardized tests such as the Florida Comprehensive Assessment Test (FCAT) are administered solely in English and then used to determine if a child advances to the next grade level. All children are assessed in the same language regardless of level of English fluency. DLL children are sometimes given extra time to complete the exam, however that tends to be the only accommodation provided (National Dissemination Center for Children with Disabilities, 2014).

The more compelling issue however, is lack of understanding and sensitivity of these language differences, which has lead to a disproportionate number of Latino children being placed in special education and other related services (Baker, 2001; de Valenzuela, Copeland, Qi, & Park, 2006). Also, related to the FCAT, it is the reading score that determines advancement to the next grade level, which directly affects bilingual children with language differences. This phenomenon has been observed in countries all over the world; from the United Kingdom (Mennen & Stansfield, 2006) to Singapore (Gupta & Chandler, 1993) to Australia (McLeod & McKinnon, 2007) to Hong Kong (Cheuk, Wong, & Leung, 2005). One theory that may explain the misinterpretation of these tests when it comes to bilingual children is, they have to learn double the words and more sentence patterns to achieve the same language complexity as their monolingual peers (Peña et al., 2011). Therefore, a lower score may mean a learning disability, or may be a manifestation of a temporary lower proficiency in English. In the latter case, a special education referral would not be appropriate. Instead, English acquisition could be supported in a general education setting while native language skills are maintained.

Children who are taught in English and for whom their native language is neglected in a school setting, are at risk for losing their home language and the advantages of bilingualism. For example, individuals tend to avoid speaking a language especially if they stumble over the words. Therefore they spend time communicating in more familiar ways, specifically in ways reinforced by members of the verbal community (Bernard-Opitz, 2005). Due to situations in which reinforcement is only being provided for English responses at school, most young children who learn English as their second language in school tend to switch to English and lose their home language (Cheatham, Santos, & Ro, 2007). As a result, the child's lack of competence in the prominent language in school combined with the school's lack of consideration of his or her native language, may leave the child disadvantaged and ultimately labeled with a language impairment when compared to his or her peers (Kohnert, Yim, Nett, Kan & Duran, 2005). According to Espinosa (2008), lack of fluency in the English language and adjustment to the community's culture influences lack of academic achievement. Perhaps this explains why dropout rates are twice as high for bilingual individuals when compared to native English speakers as reported in Espinosa (2008).

Recent literature has shown bilingualism to be an advantage rather than an obstacle to become proficient in a language. Kohnert and colleagues (2005) as well as Cheatham et al., (2007) pointed out learning in one language can facilitate the acquisition of another in the case of DLLs. There is no evidence that bilingual children are slower than monolinguals at reaching stages of language development, but rather the children's language is sensitive to the amount of exposure of each language (Paradis et al., 2011). The amount of exposure to each language could limit and possibly hinder the child's ability to interact in a specific language, thus if we are not aware of this we could mislabel a child as socially impaired. The sensitivity to language

corresponds as well with the literature stating the generalization from one language to another could be restricted to the interface between spoken and written language (Kohnert et al. 2005).

The amount of exposure to either language may become skewed as the child spends more time in school and other activities that do not set the occasion or advocate for the home language (Greene, Peña, & Bedore, 2012; Paradis et al., 2011). As bilingual children continue to develop not only is there a preference in language but also an alternation between languages during communicative tasks (Greene et al., 2012). It is in this phase that advocating and promoting for opportunities to keep developing and supporting the primary/home language may prove valuable for proficiency in both languages (Kohnert, 2010).

Not everyone believes that there are benefits to being bilingual. As identified by Espinosa (2008) some of the common myths and early theories about bilingual children or ELL's have been disproven. For the purpose of this study we will review a few to emphasize the flaw in these beliefs and make a case as to why the acquisition of another language is beneficial.

One myth was that learning two languages during the childhood years might confuse and delay a child's acquisition of English. However, most children actually learn more than one language successfully in their earlier years. However this is only true if the children have the right amount of exposure to each language and support outside the home for each. Furthermore children who have learned more than one language show competence in phonology, lexicon, and syntax in each language (Baker, 2001; Cheatham, et al., 2007; Espinosa 2008; Paradis, et al., 2011). Being an ELL does not lead to language impairment to a higher degree than being monolingual (Cheatham et al., 2007; Kohnert et al., 2005), but language is sensitive to exposure and the level of proficiency is less than optimal due to the opportunities to speak the language in their environment.

Beliefs such as these linger in educational and clinical fields and some people still believe that ELLs will show slow developmental language skills and have significant delays or disabilities if not taught in a monolingual environment (Cheatham et al., 2007). However, for a child to benefit from being bilingual, native language support may be a necessary component. This is because there might be a gap between academic performances in each language for an DLL due to differences in proficiency to each language. If there is native language support in school during the transition into this new language environment, we may observe a parallel development in academic, social and communication skills (Kohnert et al., 2005). The DLLs may continue to demonstrate academic gains while they acquire the new language rather than halt all academic progress until proficiency in the new language is developed.

Responding in general may be suppressed if their Spanish repertoire is not encouraged and reinforced. Meanwhile their English repertoire needs to catch up to grade level to receive full benefit from academic programming and be to proficient enough to communicate adequately with peers. We can bridge the gap between proficiency in the dominant and non-dominant language by providing native language support and increasing response rates, thereby improving student engagement. By providing this support there may be more opportunities to reinforce social initiations and verbal behavior acquisition in general. In addition, native language supports may reduce the aversive nature of academic demands encountered in the classroom and allow the continuation of academic and social skill acquisition in the native language, while learning English.

One possible example of why native language support may be beneficial is the following scenario. A Spanish-speaking preschooler (Roberto) who is in an English classroom has limited English proficiency. His Spanish skills are being put on extinction because his teacher does not

understand them and cannot reinforce them. Because of this, Roberto is manding less and less. Now that he has fewer social initiations, there are fewer opportunities for his verbal community to shape responses. Roberto is less engaged with people in his environment. It is also possible that academic demands and social interactions in this environment may become aversive because he cannot perform what is asked of him and cannot communicate with his peers.

Whether or not this scenario is likely to happen depends on whether the language of the listener (i.e., teacher) has an impact on the verbal behavior of the DLL. We know from the research that simultaneous bilinguals (children who are exposed to two languages since birth) can adjust their language to that of their listener (Genesee, Bolvin, & Nicoladis, 1996). This demonstrates that children's verbal behavior has some sensitivity to the language of their listener but the impact of this phenomenon on child language quality is unknown. Will DLLs initiate more with a language partner that speaks their dominant language? Will DLLs match their language to that of their partner? Will the quality of language interaction (in the form of mean length of utterance [MLU]) vary according to whether the child is in a dominant or non-dominant language context?

The purpose of this study was to measure whether young DLLs adjusted their language to that of their listeners, and if the number of social initiations and MLU varied across therapists who speak different languages. This study replicated previous research by Genesee and colleagues (1996) on children adjusting their language to that of their listener and examined the quality of the children's verbal behavior across language partners in the form of MLU. Number of initiations speaks to the opportunities to shape responses and MLU speaks to the quality of this interaction. Additionally, this study provided some insight on providing support for native language conversational partners in school.

CHAPTER TWO:

METHODS

Participants

Eight Spanish-speaking Dual Language Learners (DLLs), ages 4 and 5 years old, enrolled in a preschool were recruited to take part in the study; however, only four children completed participation, due to the other four becoming unavailable due to the end of their school year. Only completed data sets are presented here. Inclusion criteria were having family members speaking Spanish to them at home and receiving instruction in English at school, in addition to having no current physical, emotional, and/or behavioral disorders based on the DSM-IV. All children's language abilities were assessed using the Pre Language Assessment Scales (preLAS) to determine the level of proficiency in each language. The preLAS is a language assessment that focuses on receptive and expressive language by testing the child on letter recognition, number recognition and concepts, color recognition, shapes and space, and reading and writing if possible (preLAS – CTB/Mcgraw-Hill, n.d.). There was no criterion for inclusion based on the results of this assessment.

Blake was a 4-year-old. His parents reported that they spoke Spanish to him at home and the preschool director confirmed he received instruction at the preschool in English. He scored a level of 2 out of a possible 5 on the preLAS language assessment in both English and Spanish. These results suggest that Blake had limited proficiency in both languages.

Leslie was 4-years-old. Her parents reported that they spoke Spanish to her at home and the preschool director confirmed she received instruction at the preschool in English. She scored

a level of 1 out of a possible 5 on the preLAS language assessment in Spanish; she scored a level of 2 out of a possible 5 on the preLAS language assessment in English. These results suggest that Leslie had limited proficiency in both languages, especially in Spanish.

Alejandra was 5-years-old. Her parents reported that they spoke Spanish to her at home and that she received instruction at the preschool in English. The child scored a level of 2 out of a possible 5 on the preLAS language assessment in Spanish; she scored a level of 3 out of a possible 5 on the preLAS language assessment in English. These results suggest that Alejandra had limited proficiency in the Spanish language and moderate proficiency in English.

Wilson was 5-years-old. His parents reported that they spoke Spanish to him at home and that he received instruction at the preschool in English. He scored a level of 2 out of a possible 5 on the preLAS language assessment in both English and Spanish. These results suggest that Wilson had limited proficiency in both languages.

In Table 1 is a summary of the participants' characteristics and their language proficiency scores.

Setting

The sessions for Blake and Leslie took place at the students' preschool in a separate room to minimize distraction in their classrooms. The sessions for Alejandra and Wilson took place at the university in a separate room to minimize distraction. Informed consent from the children's parents and assent from the children were obtained before any sessions were conducted.

Table 1. Participant Characteristics

Participant	Age (Years)	Home Language	School Language	PreLAS English	PreLAS Spanish
Blake	4	Spanish	English	2	2
Leslie	4	Spanish	English	2	1
Alejandra	5	Spanish	English	3	2
Wilson	5	Spanish	English	2	2

Note. Participant characteristics. Home language reflects the language predominantly spoken in the home and was provided by parents. School language reflects the language predominantly spoken at school and was provided by school personnel. PreLAS scores are out of 5 possible.

Materials

Materials included age-appropriate toys found in a playroom (i.e., dolls, Play-doh®, puzzles, blocks), two different color shirts (blue and green, to differentiate the therapist language), and a camcorder in order to record the sessions. Also, two iPod Touches™ with ABC Data Pro™ installed were used to record observed data.

Measurement

The three target behaviors were: the language in which the child spoke (as an indicator of whether or not the child adjusted his or her language to that of the listener), number of initiations, and mean length of utterance. The adjustment of the child's language was measured as a percentage of times a child emitted vocalizations in the language that matched that of the listener during his/her interaction(s) with the therapist. We also recorded mixed language and unintelligible utterances. The number of initiations was measured as number of times the child independently emitted vocalizations (i.e., unprompted vocalizations with at least 3 s of silence

from the previous vocalization and not in response to a scheduled prompted therapist utterance in the therapist prompts condition which was used for two participants). For the mean length of utterance, each utterance was defined the number of seconds in a vocalization by the child. Each utterance was discriminated by a pause of 3 s between phrases/statements. Each utterance was averaged across utterances within each session (following procedures used by Genesee et al., 1996).

All data were collected by trained research assistants using the ABC Data Pro™ application installed on an iPod Touch™. Research assistants were trained by the primary investigator using similar techniques as outlined in a protocol by Dempsey et al. (2012). The data were analyzed and interpreted throughout the study using visual inspection of graphed data to assess level, trend and variability.

Interobserver Agreement (IOA)

Two independent observers collected data on 45% of the sessions. The agreement between the observers was calculated to assess the agreement between two observers. Each session was divided into 10-s intervals. Data collected by each observer were compared within each interval. Percentage agreement was determined by counting the number of intervals with agreement and dividing by the total number of intervals (agreements plus disagreements) and multiplying by 100 to obtain a percentage. If one observer recorded a zero (i.e., no behavior occurred) and the other observer recorded behavior in that same interval, it was counted as a disagreement. Intervals in which a disagreement occurred regarding the number of occurrences of any behavior not including zero were included by dividing the smaller number by the larger number in each interval. IOA was 99% on child initiations and utterances (range = 93% - 100%).

Treatment Integrity

Treatment integrity questionnaires were used on 45% of the sessions to assess fidelity of implementation (see appendix A). There was an average of 94% on treatment integrity across therapists and language conditions (range = 83%-100%).

Design and Procedures

The present study used a multi-element design to compare responding across two language conditions (English and Spanish) for each participant using at least three different therapists for each language condition.

Informed consent was obtained from the participant's caregiver before running any sessions. Discussion of time requirements, procedures, and how to contact the researcher was included in the consent form signed by the parent(s). Once parental consent was obtained, the researcher administered the preLAS language assessment in Spanish and English.

Preference assessment. To determine which toys would be included in the sessions, a Multiple Stimuli without Replacement (MSWO) preference assessment was conducted as outlined by DeLeon and Iwata (1996). The top three items were present during all language sessions.

Comparison of therapist language. There were two conditions in this phase, English and Spanish. During comparison of therapist language phase, the therapist greeted the child in a specific language, either English or Spanish, depending on the condition. Therapists were assigned language conditions based on their proficiency in either language and consistently adhered to their assigned language throughout all sessions and for all interactions outside of session, if or when they occurred. Then the child was instructed play with the provided toys (this

interaction took place in the language assigned to the therapist). The room was equipped with the three most preferred items as established by the MSWO preference assessment.

To facilitate discriminated responding across the Spanish and English conditions, Spanish therapists always wore green colored shirts, and English therapists always wore blue colored shirts. Before each session, there was a 3-min pre-exposure to the therapist's language during which the therapist provided non-contingent attention (play-based statements or observations) while placing no demands on the child. All child responses were followed by an appropriate therapist vocal response (e.g. if the child said, "I am making a play-doh® car", the therapist said, "I love your play-doh® car!" in response). After these 3 min, the 5-min session began during which data were collected on child language dependent variables. At the beginning of the 5-min session, the therapist said, "If you want to play with me, you can talk to me" in his or her assigned language. After that, whenever the child initiated any vocal interaction with the therapist, he or she responded accordingly based on the therapist assigned language within 3 s of the end of the child's initiation. If the child initiated a vocalization in the same language as the therapist in the condition, the therapist responded with vocal attention related to the child's initiation for 3-5 seconds. If the child initiated in a language other than the language assigned to that session, the therapist responded in the language assigned stating he or she did not understand what the child is trying to say. If the child alternated between both languages in his initiation, the therapist only responded to what was stated in the assigned language. If the child engaged in an unintelligible utterance, the therapist said (in his or her assigned language) that he or she did not understand. We alternated between Spanish and English across sessions. However, each therapist was assigned one language and only spoke to the child in that language throughout the study. At least three therapists were alternated across sessions in each language. The English therapists

were labeled as E1, E2, E3 accordingly, the Spanish therapists were labeled S1, S2, S3 accordingly.

Therapist initiation. For two participants, there was no differentiation in the data for any of the dependent variables between languages due to a low rate of initiations regardless of language (defined as one or fewer responses in six sessions). Therefore, a prompting component was added to the procedures for these participants. This condition was only used if very low response rates were observed across both language conditions. If low-rate responding was observed in one condition but not the other, we did not use this procedural modification.

The therapist initiated social interaction on a 30-s schedule and continued to provide reinforcement in the form of attention for independent initiations during the 5-min language session (the 3-min pre-exposure was the same as in the previous condition). However, child initiations were only recorded as initiations if they occurred 5 s or more after the therapist's scheduled prompt. If the child was talking at the moment the therapist was scheduled to deliver a social initiation prompt, the therapist skipped that prompt. Data were collected on the other dependent variables regardless of whether they occurred within 5 s of the therapist's scheduled prompt or not. The justification for introducing the therapist initiation was that there needed to be enough responses to have data to analyze. The prompting schedule was designed to indicate to the child that social interaction was available from the therapist, perhaps serving as a discriminative stimulus for talking.

CHAPTER THREE:

RESULTS

Preference Assessment

The individual results from the MSWO preference assessment are shown in Figures 1-4 for participants Blake, Leslie, Alejandra, and Wilson. Results across the four participants are arranged from most preferred item to least preferred item. Items ranking in the top three for each participant were used as available toys during all language sessions.

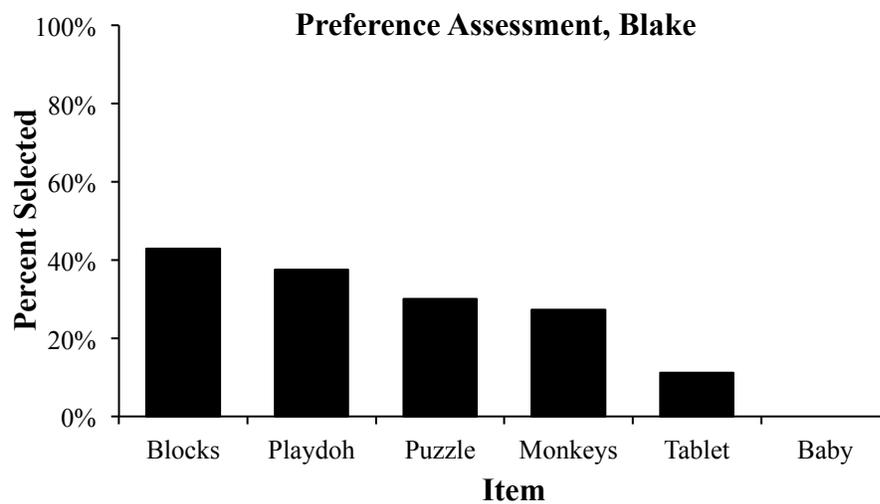


Figure 1. MSWO preference assessment results for Blake. Items are on the x-axis and percentage of trials selected is on the y-axis.

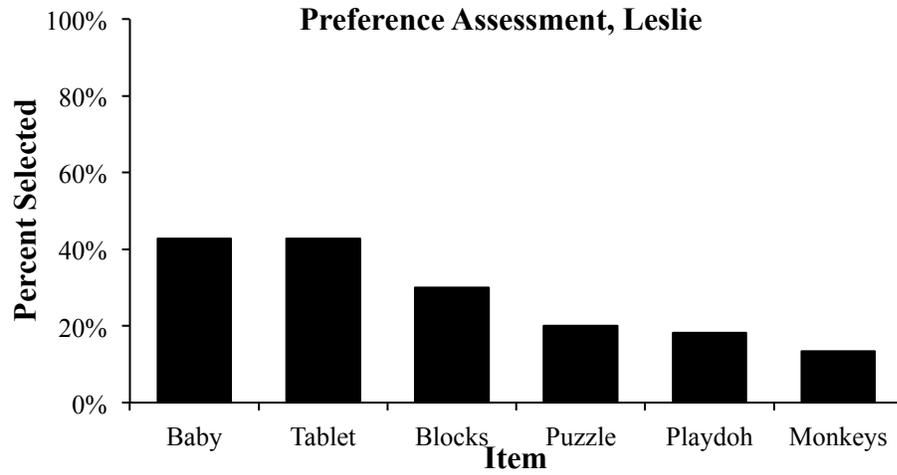


Figure 2. MSWO preference assessment results for Leslie. Items are on the x-axis and percentage of trials selected is on the y-axis.

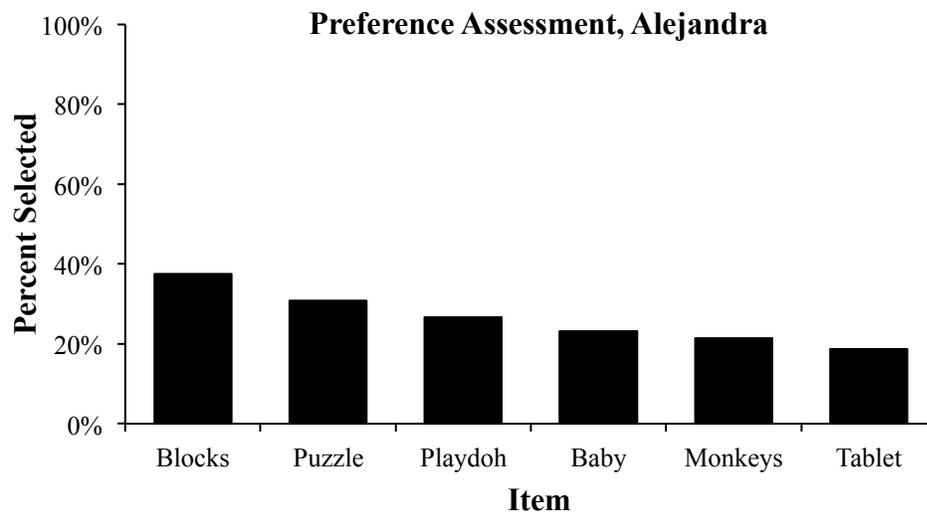


Figure 3. MSWO preference assessment results for Alejandra. Items are on the x-axis and percentage of trials selected is on the y-axis.

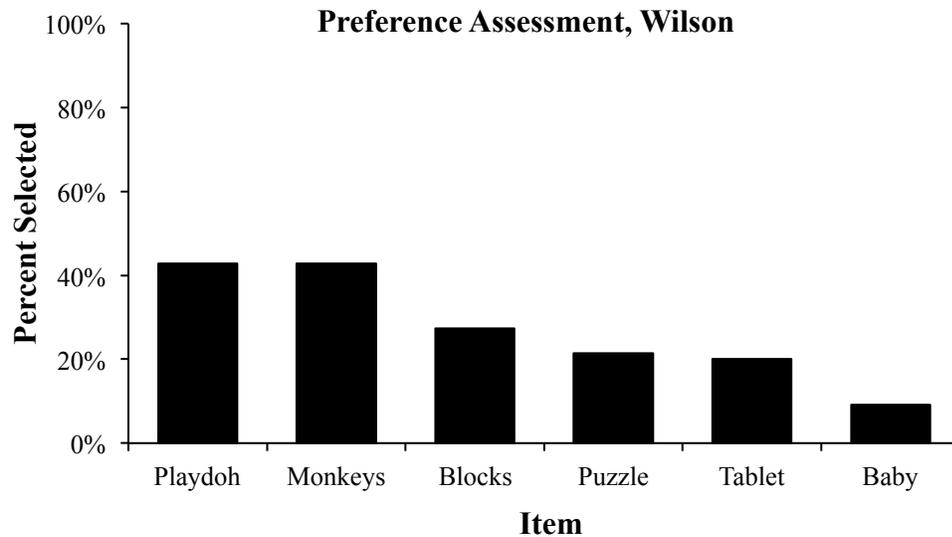


Figure 4. MSWO preference assessment results for Wilson. Items are on the x-axis and percentage of trials selected is on the y-axis.

INDIVIDUAL RESULTS

Blake. Figure 5 shows the number of initiations for Blake across English and Spanish conditions. In the Spanish condition, he initiated an average of 12 times (range = 4-21) and for the English condition, an average of 20 times (range = 1-31). During the English conditions he initiated at higher rates in comparison with the Spanish condition (75% of the time).

Figure 6 displays Blake's MLU across English and Spanish conditions. In the Spanish condition, His average utterance across sessions was 2.09 seconds (range = .8 - 4.4) and for the English condition his average utterance across sessions was 3.05 (range = .6 – 6.64). Blake had a higher mean length of utterance during 3 of the 4 English sessions when in comparison with the Spanish sessions, post intervention.

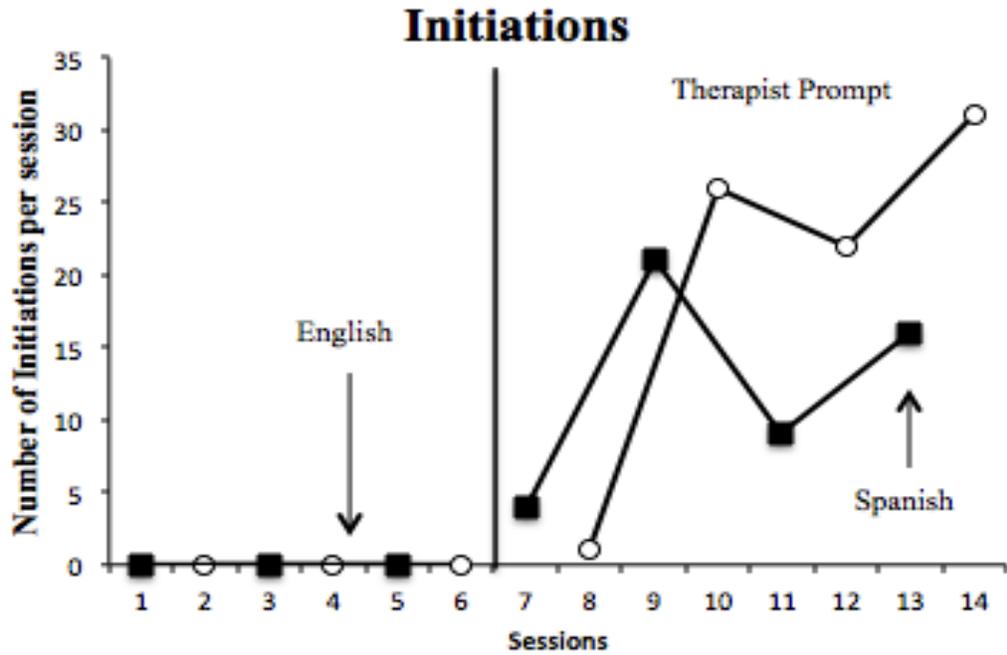


Figure 5. Numbers of initiations by Blake, language conditions are differentiated by the closed squares for Spanish and open circles for English.

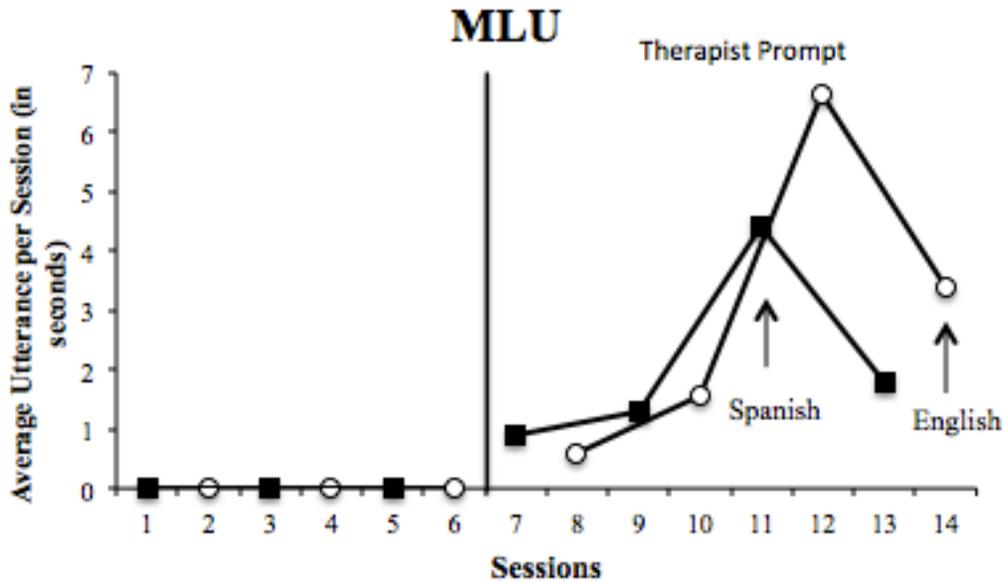


Figure 6. Mean length of utterance by session for Blake, language conditions are differentiated by the closed squares for Spanish and open circles for English.

Figures 7 and 8 show Blake's adjustment to the language of his listener by displaying the percentage of initiations by language and the percentage of language spoken in each condition.

These graphs have two purposes. First, Figure 7 summarizes the proportion of initiations in each

language in a manner that makes it easy to see which language is dominant. Whereas Figure 5 shows the number of initiations that occurred in a given condition (Spanish or English) regardless of the language in which the initiation happened, Figure 7 shows us in which language the child was most likely to initiate in each language condition. Second, Figure 8 shows the degree to which the child matches his or her language to the language of the therapist within initiations. Even if a child were to initiate 90% in the correct language, he or she may still have a lot of variance in the percentage of language spoken if he or she switches between languages in an utterance or if some of the child's utterances are unintelligible. Also, Figures 7 and 8 show us that a child may initiate differentially across conditions but may or may not match the language of the therapist in those initiations or in the entirety of their utterances. Although a child can initiate in the correct language it does not mean he or she will adhere to this language throughout the whole utterance, or when in an extended back and forth conversation with a therapist. Figure 8 takes into account the total length of utterance as well. For example if a child initiated 90% in the correct language, the 10% that he or she did engage in the incorrect language may have had utterances that were much longer than those in the correct language.

Figure 7 displays Blake's percentage of initiations in each language according to each condition; he initiated appropriately 100% of the time in the English condition. In the Spanish condition, he initiated appropriately 98% of the time, and the remaining 2% of initiations were in the incorrect language, which was English. Figure 8 displays Blake's percentage of the language spoken across conditions. He adjusted his language to that of his therapist consistently 100% of the time in the English condition; He adjusted his language 96% of the time in the Spanish condition and the other 4% he spoke in the incorrect language.

Percentage of Initiations by Language

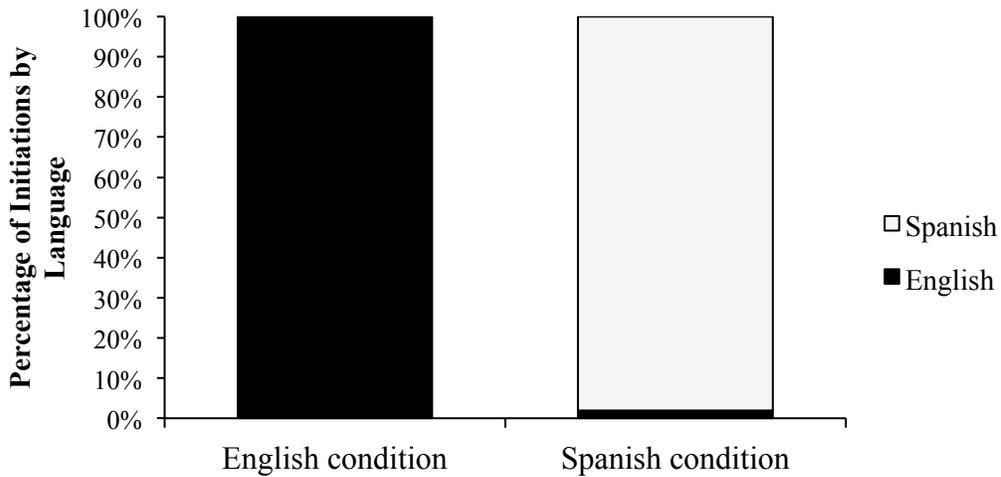


Figure 7. Percentage of initiations by language across each language condition for Blake. The presence of English in the Spanish condition means he initiated in the incorrect language, the absence of the Spanish in the English condition means he never initiated in the incorrect language in that condition.

Percentage of Language Spoken

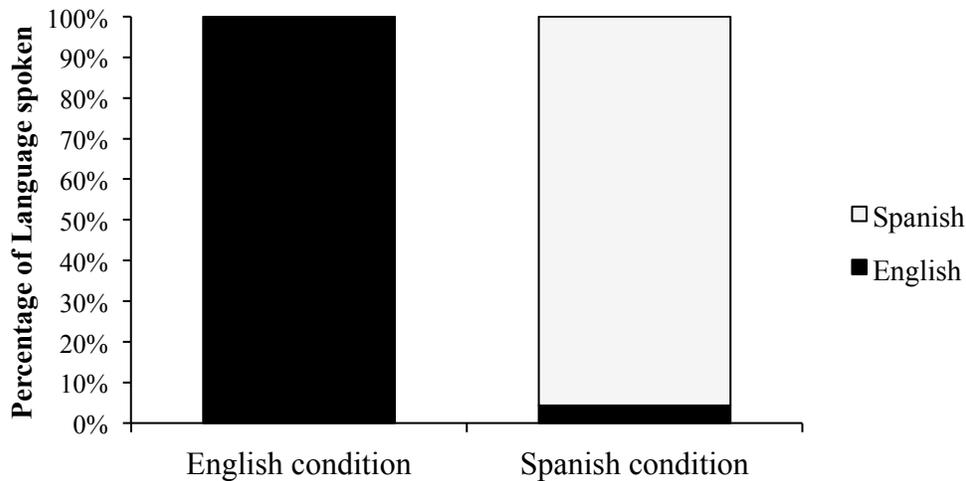


Figure 8. Percentage of the language spoken across each language condition for Blake. The presence of English in the Spanish condition means he spoke in the incorrect language, the absence of Spanish in the English condition means never he spoke in the incorrect language in that condition.

Leslie. Figure 9 shows the number of initiations for Leslie across English and Spanish conditions. In the English condition, she initiated an average of .71 times (range = 1-2) and she

never initiated in the Spanish condition. Figure 10 displays Leslie's mean length of utterance across English and Spanish conditions. In the English condition, her average utterance across sessions was 1.34 seconds (range = 0 - 5.51) and in the Spanish condition she did not speak at all.

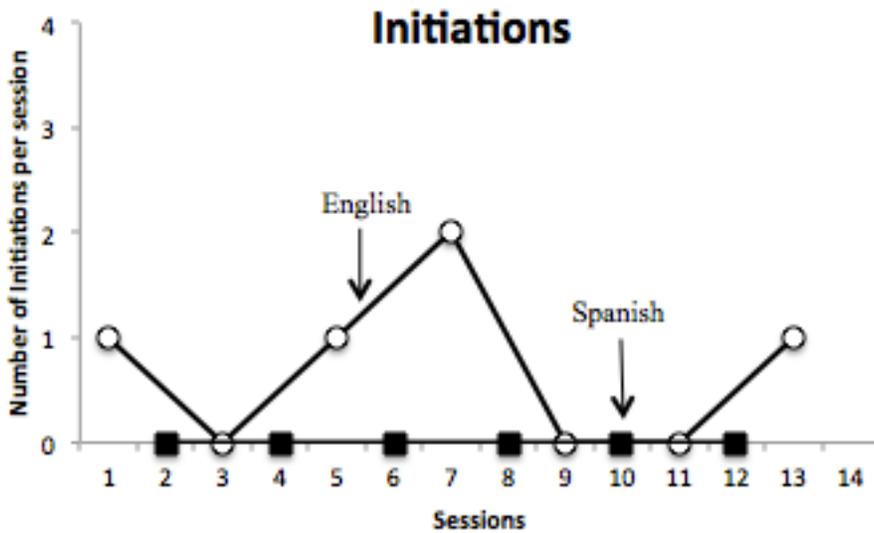


Figure 9 Initiations by session for Leslie, language conditions are differentiated by the closed squares for Spanish and open circles for English.

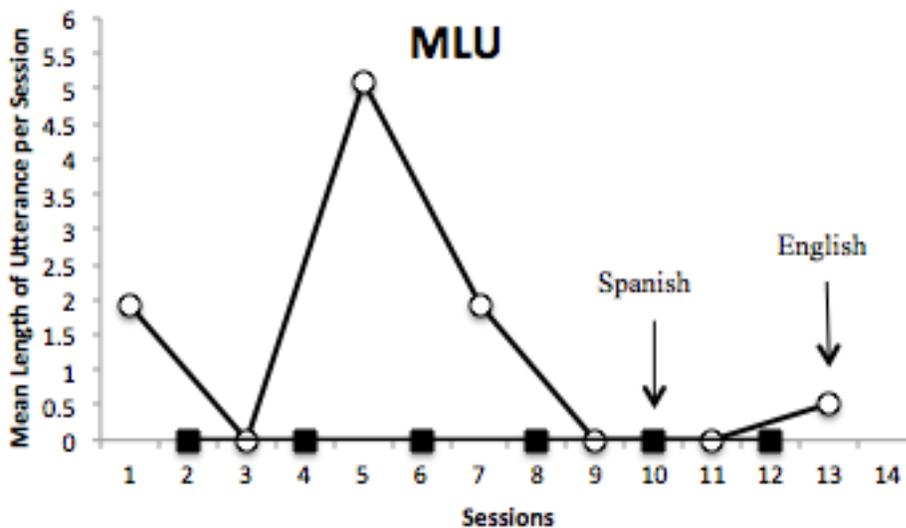


Figure 10. Mean length of utterance by session for Leslie, language conditions are differentiated by the closed squares for Spanish and open circles for English.

Figures 11 and 12 shows Leslie's adjustment of language to her listener by displaying the percentage of initiations by language and the percentage of language spoken in each condition. Figure 11 displays Leslie's percentage of initiations in each language according to the condition; she initiated appropriately 79% of the time in the English condition, and the remaining 21% were mixed or unintelligible utterances. She initiated appropriately 0% of the time in the Spanish condition. Figure 12 displays Leslie's percentage of language spoken across conditions. She adjusted her language consistently 55% of the time in the English condition and the other 45% were made up of mixed or unintelligible utterances. We could not determine her percentage in the Spanish condition due to her lack of talking in this condition.

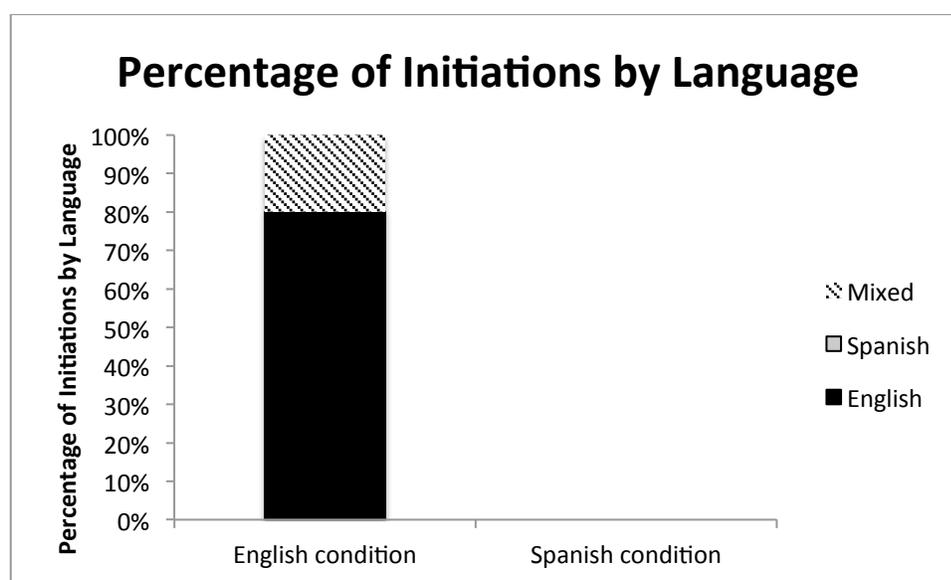


Figure 11 Percentage of initiations by language across each language condition for Leslie. The presence of the mixed utterances in the English condition means she initiated using utterances other than English (mixed between English and Spanish or unintelligible).

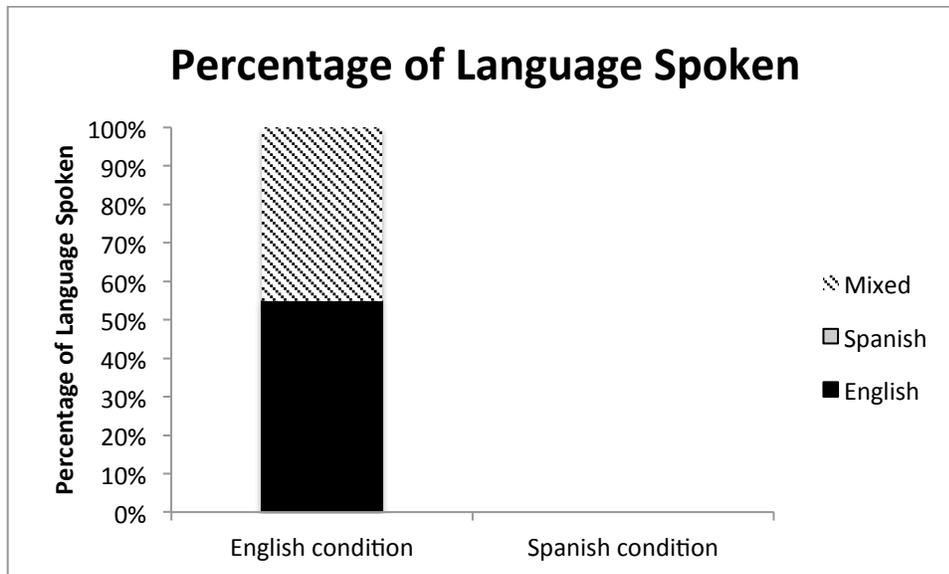


Figure 12. Percentage of the language spoken across each language condition for Leslie. The presence of the mixed utterances in the English condition means she spoke in utterances other than English (mixed between English and Spanish or unintelligible).

Alejandra. Figure 13 shows the number of initiations for Alejandra across English and Spanish conditions. She only initiated once pre intervention, across six sessions. This initiation occurred in the Spanish condition. Therefore, we implemented the therapist social-interaction prompting schedule, including a therapist social initiation once every 30 s (unless she was talking at the time the prompt was scheduled to occur). Post intervention, she initiated an average of 8.4 times (range = 0 – 19) in the English condition, and an average of 20 times (range = 1-31) in the Spanish condition. Figure 14 displays Alejandra’s MLU across English and Spanish conditions. In the Spanish condition, her average utterance across sessions was 0.58 seconds (range = 0 – 1.26) and for the English condition her average utterance across sessions was 0.77 (range = 0 – 1.48).

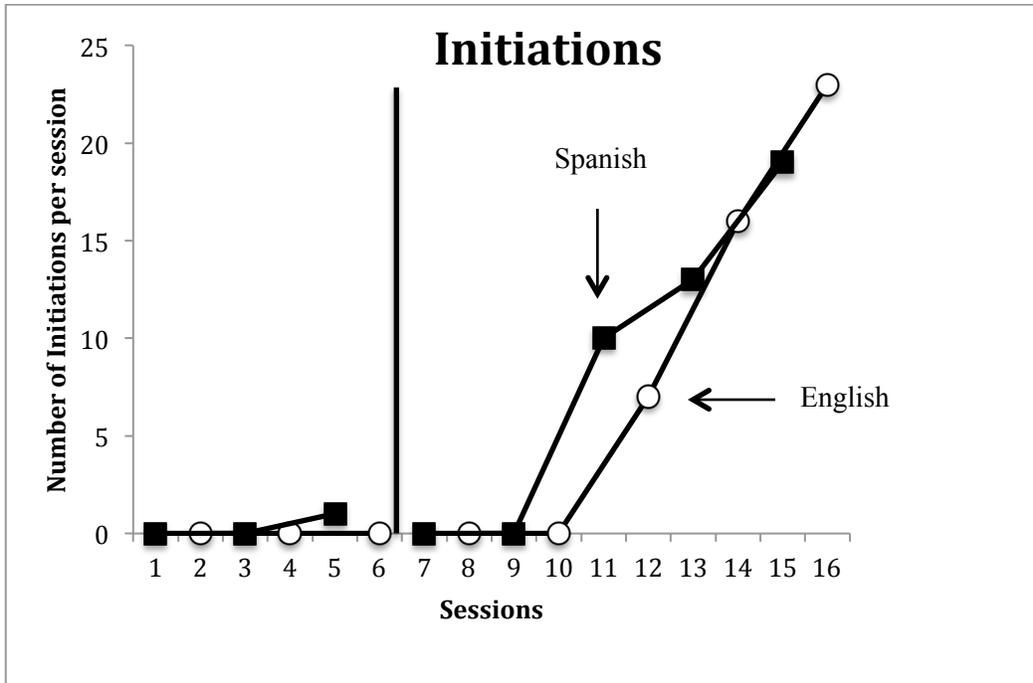


Figure 13. Initiations by session for Alejandra, language conditions are differentiated by the closed squares for Spanish and open circles for English.

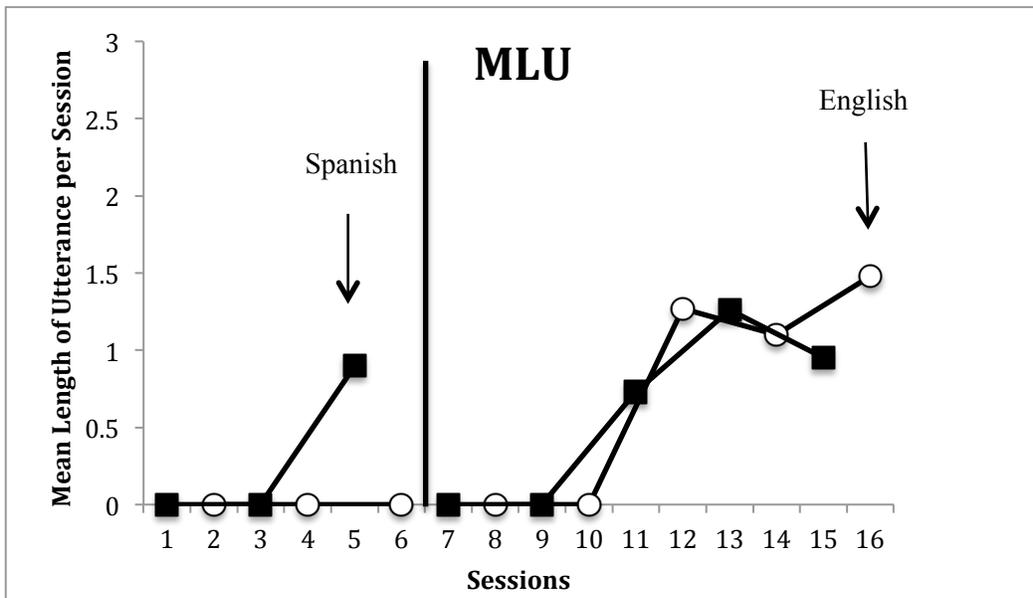


Figure 14. Mean Length of Utterance by session for Alejandra, language conditions are differentiated by the closed squares for Spanish and open circles for English.

Figures 15 and 16 show Alejandra's adjustment of language to that of her listener by displaying the percentage of initiations by language and the percentage of language spoken in

each condition. Figure 15 displays Alejandra’s percentage of initiations in each language according to the condition; she initiated appropriately 89% of the time in the English condition and 11% of the time initiated in mixed/unintelligible utterances. In the Spanish condition she initiated appropriately 48% of the time, 19% in the incorrect language, which was English, and 33% in mixed utterances/unintelligible utterances. Figure 16 displays Alejandra’s percentage of the language spoken across conditions. She adjusted her language consistently 92% of the time in the English condition; the other 8% is made up of mixed/unintelligible utterances. She adjusted her language for 47% of her utterances in the Spanish condition, and spoke in the incorrect language (English) for 24% of her utterances. The remaining 29% were made up of mixed/unintelligible utterances.

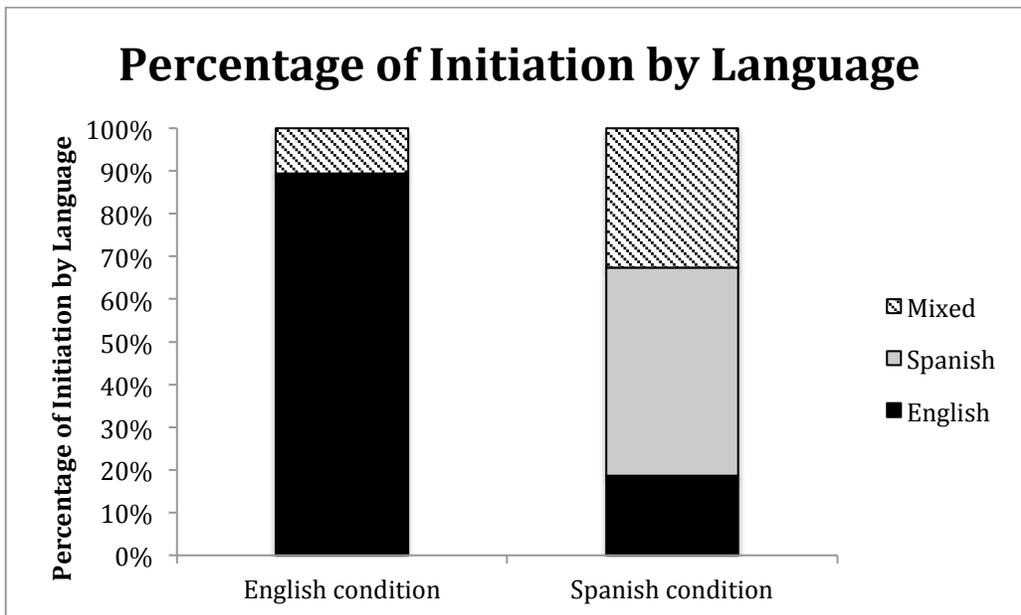


Figure 15. Percentage of initiations by language across each language condition for Alejandra. The presence of English in the Spanish condition means she initiated in the incorrect language, the presence of mixed/unintelligible utterances in the English condition means that some of her initiations were not intelligible or in the correct language.

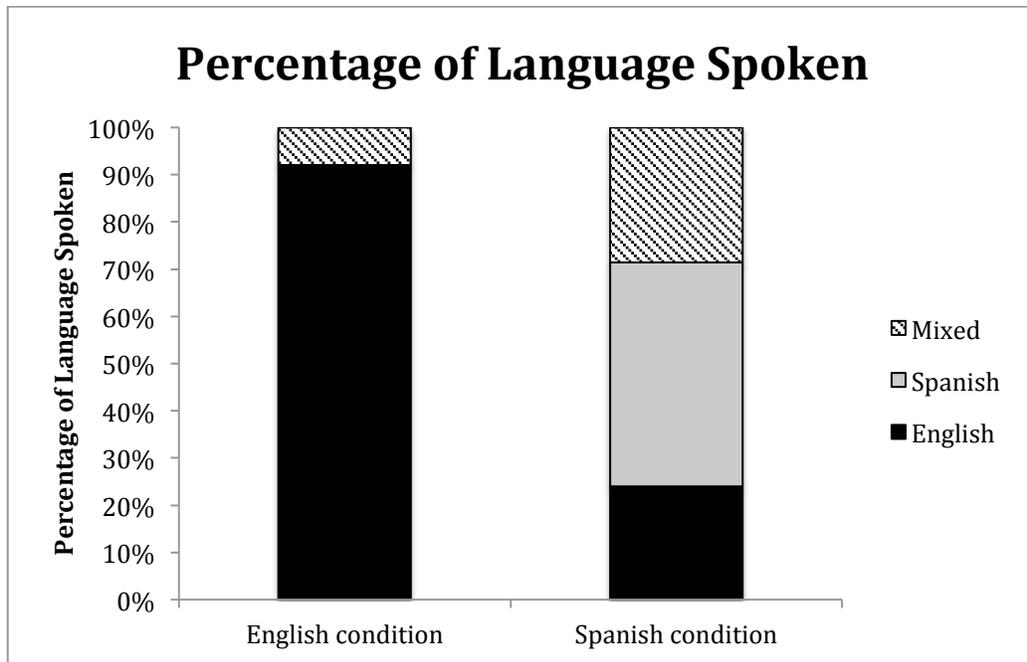


Figure 16. Percentage of the language spoken across each language condition for Alejandra. The presence of English in the Spanish condition means she spoke in the incorrect language, the presence of mixed/unintelligible utterances in the English condition means that some of her utterances were not intelligible or in the correct language.

Wilson. Figure 17 shows the number of initiations for Wilson across English and Spanish conditions. In the Spanish condition, he initiated an average of 4.2 times (range = 0 – 9) and for the English condition, an average of 11.2 times (range = 1-24). Figure 18 displays Wilson’s MLU across English and Spanish conditions. In the Spanish condition, his average utterance across sessions was .65 seconds (range = 0 – .9) and for the English condition his average utterance across sessions was .97 (range = 0.62 – 1.42).

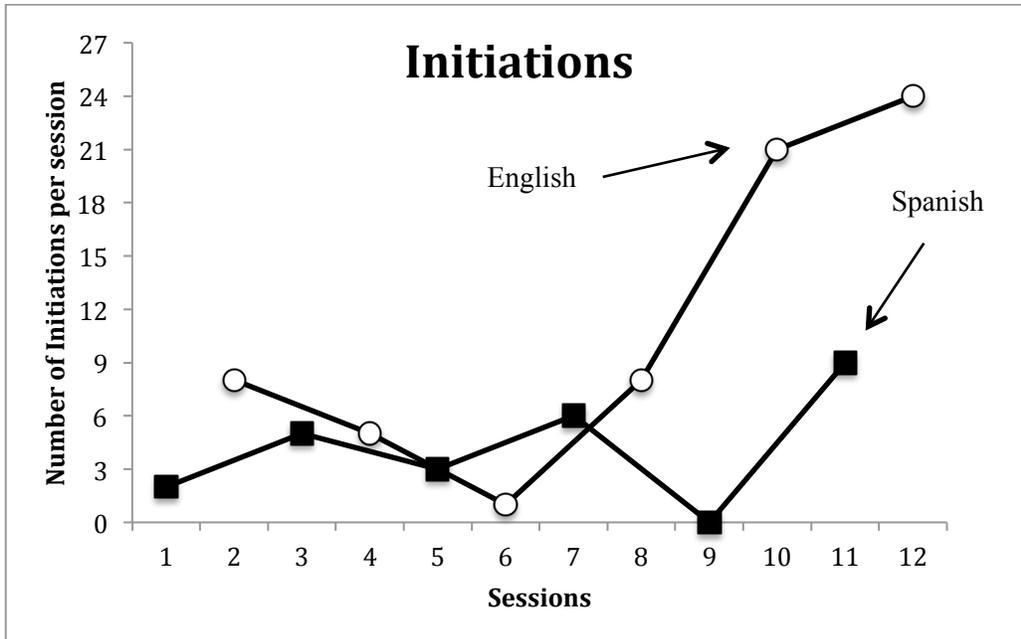


Figure 17. Initiations by session for Wilson, language conditions are differentiated by the closed square for Spanish and open circle for English.

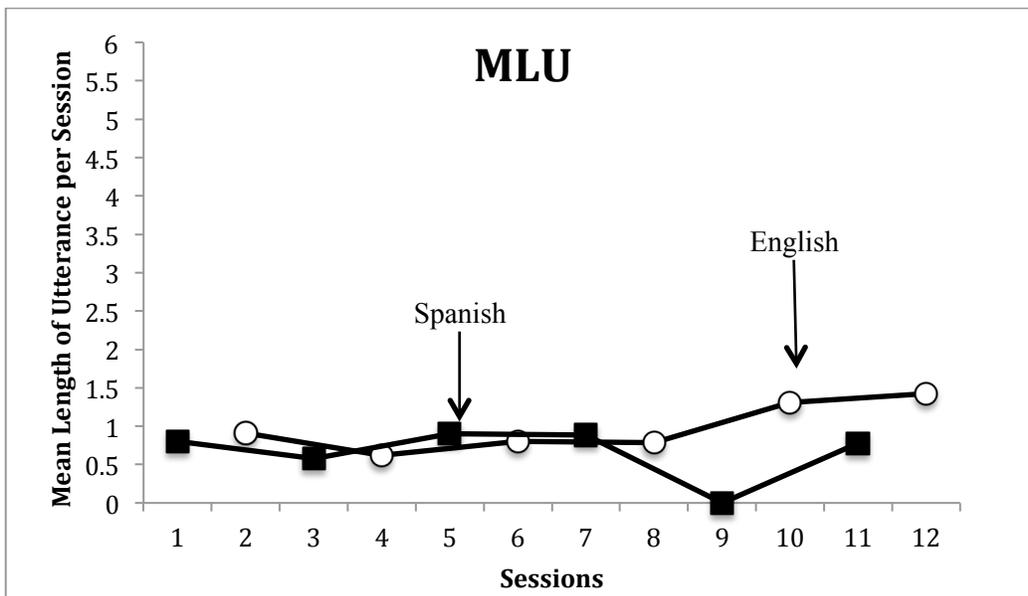


Figure 18. Mean Length of Utterance by session for Wilson, language conditions are differentiated by the closed square for Spanish and open circle for English.

Figures 19 and 20 show Wilson's adjustment of language to that of his listener by displaying the percentage of initiations by language and the percentage of language spoken in each condition. Figure 19 displays Wilson's percentage of initiations in each language according to the condition; he initiated appropriately 70% of the time in the English condition and the

remaining 30% of initiations were mixed or unintelligible utterances. In the Spanish condition he initiated appropriately 27% of the time, 31% in the incorrect language, which was English, and 42% in mixed/ unintelligible utterances. Figure 20 displays Wilson’s percentage of the language spoken across conditions. He adjusted his language to that of his listener 79% of the time in the English condition; the other 21% was made up of mixed/ unintelligible utterances. He adjusted his language correctly 43% of the time in the Spanish condition. He used the incorrect language (English) in 24% of his utterances and the remaining 33% were made up of mixed/ unintelligible utterances.

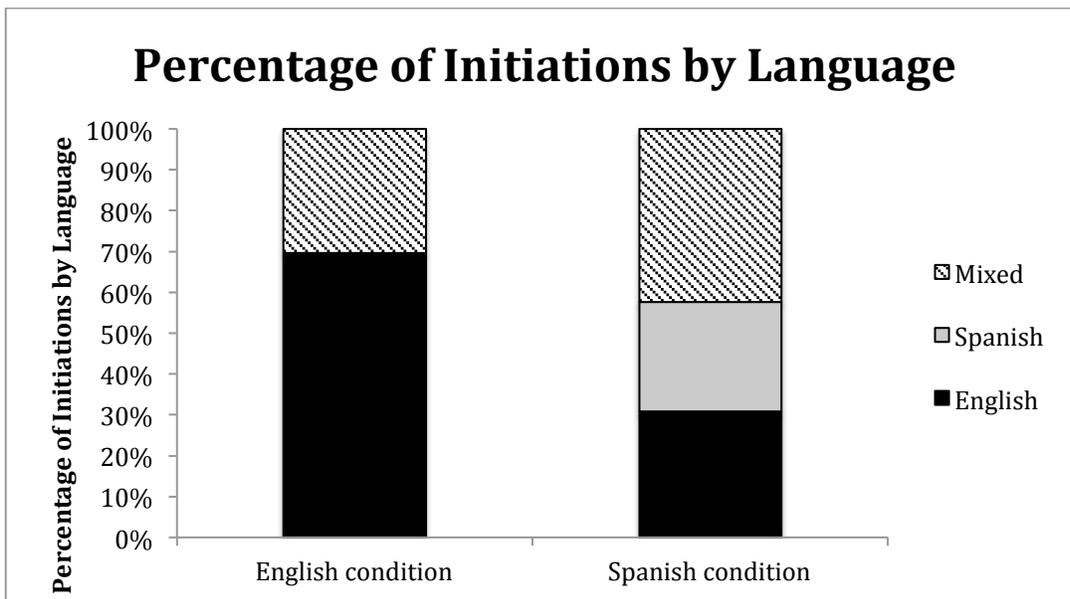


Figure 19. Percentage of initiations by language across each language condition for Wilson. The presence of English in the Spanish condition means he initiated in the incorrect language, the presence of mixed/unintelligible utterances in the English condition means that some of his initiations were not intelligible or in the correct language.

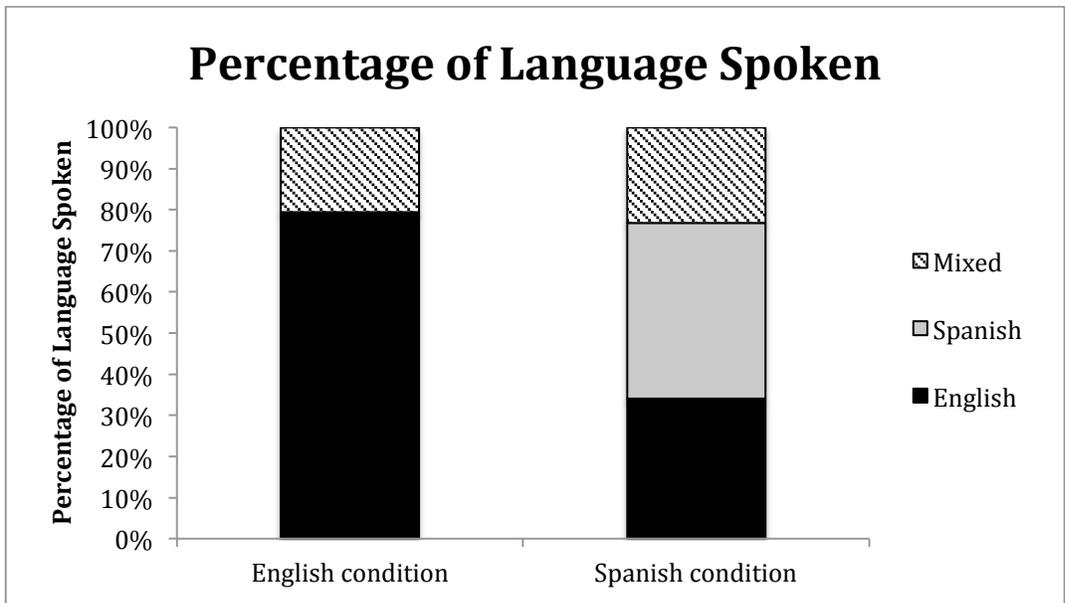


Figure 20. Percentage of the language spoken across each language condition for Wilson. The presence of English in the Spanish condition means he spoke in the incorrect language, the presence of mixed/unintelligible utterances in the English condition means that some of his utterances were not intelligible or in the correct language.

CHAPTER FOUR:

DISCUSSION

This study examined three aspects of DLL's language in the context of their proficiency in both of their languages. Our participants were a limited sample, but all children either performed equally well in English and Spanish in the preLAS language assessment (Blake and Wilson), or they had higher proficiency in English than in Spanish (Leslie and Alejandra). These results were fairly predictive of their performance during the Comparison of Therapist Language phase of the study. All participants engaged in more initiations in the English sessions than in Spanish sessions and one participant, Leslie (who had the lowest proficiency score in Spanish on the Pre-LAS) did not speak at all in the Spanish sessions. We also saw longer MLUs in English than in Spanish.

Based on the Pre-LAS scores, we would have predicted a larger separation in the data paths between the Spanish and English conditions for Alejandra, but that was not the case. We actually saw larger separations between the data paths for Blake and Wilson, whose pre-LAS scores indicated that they were equally proficient in both languages. Leslie's preLAS indicated the lowest observed (1 out of 5) proficiency in Spanish in our study, and so it is not surprising that her performance was better in the English condition than in the Spanish condition. However, we did not expect that she would not speak at all in the Spanish condition.

Overall Leslie's data seemed consistent with her language assessment data. She received a higher score in English than in Spanish; similarly figures 9 and 10 show higher rates of initiations and mean length of utterance respectively. We could not draw any implications from

her ability to adjust her language and percentage of adherence to that language due to her lack of responding in the Spanish condition. Her data might imply she would be more likely to initiate an interaction with an English-speaking partner than a Spanish-speaking partner. It may have been that the Spanish-speaking therapist was not a discriminative stimulus for reinforcement for responses in Leslie's repertoire. Given that Leslie's family does use Spanish at home, this result was surprising, even in light of her low preLAS score. It is possible that the lack of familiarity with our therapists was responsible for her absence of responding in the Spanish condition, but this did not seem to be an issue in the English condition.

Wilson's data showed an increasing trend in initiations towards the last three English sessions. However his mean length of utterance data maintained the same trend even towards the last sessions. Even though his mean length of utterance did not vary much across language conditions, his percentage of initiations in the therapist's language as well as the percentage of language spoken was higher for the English condition. He initiated more in the correct language in the English condition and adhered to the correct language in the English condition as well. His language assessment showed limited proficiency in both languages, however this is not consistent with his pre-LAS data, which would not have suggested that we would observe differentiated responding across languages. It may be that the pre-LAS measured a different aspect of language use than we measured in our study. Assessments in early childhood often include information from a variety of sources (Wright, 2010), and this study may represent an approach to examining DLLs' language usage that is different than what is commonly used.

Two of our participants (Blake and Alejandra) required an intervention to observe responding in the Comparison of Therapist Language Condition. This intervention included introducing a 30-s schedule for therapists to make social initiations that could be considered

prompts. We did not count anything the child said 5 s after the therapist statements as a child initiation, but the language in which these responses occurred (if they occurred) was included in the other dependent variables. By eliminating these responses, we were able to still track child initiations independent of these prompts. Therapists in these conditions reported that after the first few 30-s intervals passed, they were often not able to make other scheduled statements because the child was talking during the seconds in which the therapist was scheduled to make another initiation. In both cases, implementation of this procedure was correlated with a sharp increase in child initiations. However, this was not the focus of this study. Any conclusions about the role of the therapist-prompting schedule should be tempered with an understanding that it was only presented in an AB design. Regardless, this procedure may be useful in future research.

It may also be notable that the intervention was equally useful in both conditions and may have allowed us to see patterns that we would have been unable to see had we not used the intervention. For example, in Blake's case, we observed his primary reaction to novel conversation partners (therapists) across both language conditions (that is, he did not initiate interactions). However this changed when the therapist prompt intervention was introduced. The data following the intervention display an increase in both languages independent of the therapist presented, or the order the therapists were alternated. Furthermore as his initiations start to increase, the trend between both language conditions appears consistent with one another but with a gap between the two data paths. Blake's mean length of utterance data displayed a similar trend to what was observed for his initiations, that is, both data paths increased following the implementation of the intervention, with the English condition reaching a longer MLU most of the time. His data imply he might be more likely to initiate an interaction with an English-speaking listener and use longer utterances than with a Spanish-speaking listener.

Likewise, Alejandra's data showed no initiations/utterances in the first three English condition sessions and only one in initiation and utterance in the Spanish condition. After six sessions with only one response, we implemented the therapist-prompting schedule. Initially, we still did not see any responding, but we did see emergence of initiations in the 5th and 6th sessions after the intervention was implemented. The Spanish therapist for that 5th session was the same Spanish therapist with whom she made the only response she made prior to the introduction of the therapist-prompting schedule intervention. The English therapist was novel. Because both therapists occasioned responding, we continued the next six sessions alternating between those two therapists. Therefore, it is unclear if the intervention was responsible for the increase in her responding or if there were features of those therapists that served as discriminative stimuli for responding. Although her initiations and MLU varied across language conditions and no clear differentiation was shown, her data show (Figures 15 and 16) that she initiated in the language associated with the present therapist more consistently and adhered to the language established by the condition more effectively in the English condition than in the Spanish condition. Her data may imply that she may be just as likely to initiate interactions with either an English-speaking or Spanish-speaking partner. However she might be more likely to initiate in the correct language with an English-speaking partner and adhere to that language more effectively than with a Spanish partner, as would be expected given her proficiency in English versus Spanish. Paradis, Genesse, and Crago (2011) report that bilingual children may fill in vocabulary gaps in their non-dominant language with words from their dominant language until they learn the words they need in their non-dominant language. This observation aligns with our data.

It is possible that the results related to number of initiations and MLU in each condition could be due to preference for, comfort with specific therapists, or both. However, we included

no fewer than three therapists for each language, so it would be unusual for a child to prefer all the therapists assigned to one condition over all the therapists assigned to another condition if language were not the feature influencing that preference. We used male and female therapists for both languages and all therapists were in their 20s or 30s with multiple years of experience working with children.

We were also interested in whether our participants' language matched the language of the therapist for each session. The percentage of initiations in each language and the percentage of each language spoken in each condition helped us to evaluate the degree to which our participants adjusted their language to that of their listener. What we found was that all our participants mostly used English in the English sessions, although some of their utterances were mixed or unintelligible. However, in the Spanish sessions, we saw a blend of English, Spanish, as well as mixed or unintelligible utterances (except for Leslie, who did not speak in the Spanish condition). This was expected for Alejandra, whose proficiency was higher in English than in Spanish on the pre-LAS, but was unexpected for Blake and Wilson.

The present results are consistent with the literature that bilingual children as young as 4 years old adjust their language to that of their listener most of the time (Genesee et al., 1996). Our participants did differentially respond in the language that matched the therapist in each condition, even though this was more so in English (the dominant language for two participants: Leslie and Alejandra) than in Spanish. It may be that when a child is in his or her non-dominant language context, as in the Spanish sessions in this study, the child uses words from the dominant language or mixed utterances to “make up for” non-dominant language deficiencies ((Kohnert, 2010; Paradis, Genesee, & Crago, 2011). Thus, it should be noted that language

proficiency in either language may be a factor as to how well children adjust their language to that of their listener and adhere to it throughout the whole interaction.

Our results also show that a child's MLU may vary without necessarily affecting his or her number of initiations. This suggests that these factors are may be somewhat independent, even if they are related. Teachers and practitioners working with DLLs should consider tracking and reinforcing initiations and MLU separately.

It is important to point out that the time constraint placed by the end of the school year and the family's willingness to continue to bring the children to campus for sessions prevented us from continuing sessions to stability. We would have liked to see if the patterns we observed continued if and when the data stabilized. However, we achieved at least six exposures to each condition, representing sessions conducted with at least three different therapists in each language. Although the therapists' responses to the children's initiations appeared to reinforce those initiations, we were not implementing an intervention designed to change behavior, rather, we were trying to sample what was already in the participants' repertoires. The therapists' responses were designed to make sure that responding was not extinguished and to enhance stimulus control exerted by the therapists' presence. Our goal was to make comparisons across languages, not to teach communication skills.

A limitation of our procedures is that we did not differentiate between mixed utterances and unintelligible utterances. Our participants engaged in some vocalizations that were appropriate for this age group but that were not recognizable as words in either language (e.g. making engine noises while playing with a play-doh® airplane). Differentiating between non-word vocalizations and utterances in which both languages were used would have provided a more precise analysis. However, the majority of responses were in an intelligible language. Also

notable is that we chose to have our therapists respond with a statement that indicated that the therapist did not understand what the child was saying if the child used the wrong language or emitted an unintelligible utterance. This contingent social interaction may have reinforced these responses, but this practice aligned with advice provided by other researchers in this area and with practices used with early childhood populations (Sandall & Schwartz, 2008).

This study extends our understanding of bilinguals' language and how they may respond with unfamiliar/novel conversation partners. We may have obtained different results had we used therapists with whom the participants had histories (e.g. the child's family or preschool teachers). It could be that we would have seen more language overall, and maybe some responding in the Spanish condition for Leslie. However, we would not have been able to control the duration or other components of the participants' history with those therapists and thus, it may have been that factors other than language would have influenced our results. It is also possible that our choice of setting (the preschool in which instruction was provided in English and the University campus) exerted stimulus control over the children's language usage that favored English. Had we conducted the study in the children's homes, we may have observed more Spanish. However, we used all novel therapists and study personnel were not previously known to the children. The Spanish-speaking therapists were all fluent Spanish speakers with English as a second language and so should have adequately exerted stimulus control over the children's Spanish repertoires.

Because of our sample size and sampling procedures, as well as the individual variability we observed, we are unable to make claims regarding the generality of our findings to other DLLs. Future research should aim to extend these results with a larger pool of DLLs, including DLLs for whom Spanish is the dominant language. None of our participants was more proficient in Spanish than in English on the preLAS. It would be interesting to see if different results might

be obtained with children whose dominant language was Spanish. We would also be interested to see this study replicated using languages other than English and Spanish. Future studies could also do a follow-up with participants to see whether observed effects shift as the participants' language proficiency develops in one language, the other, or both. Additionally, future studies could look at interventions to improve child initiations and MLU, as well as stimulus control, in the non-dominant language.

In conclusion, the present study suggest that DLLs may adjust their language to that of their listener and that children's initiations may vary across languages even when their language assessments show their proficiency to be the same in both their languages. Perhaps our most interesting finding was that children appeared to be less successful matching their language to that of their partner in their non-dominant language (even in cases in which language assessments suggested equal proficiency). Our findings support the notion that the language of the listener does matter, and the language of the listener influences both quantity of initiations and quality (MLU, percentage of initiations and percentage of language spoken) of children's language. Even though none of our participants was more proficient in Spanish than in English, had they been, we may have seen more initiations and longer MLUs with the Spanish therapists than with the English therapists. Regardless of which language is dominant for DLLs, more support in their non-dominant language may improve the quantity of their initiations and MLUs. More initiations and more words mean more opportunities to shape stronger language repertoires, which may lay the foundation for better social, academic, and behavioral outcomes for DLLs.

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APPENDICES

Appendix B: Therapist Protocol

Protocol for Therapist

1. Therapist will greet the child outside the room and introduce him/herself in the language specified.
 - a. The therapist should never be seen/heard by the child speaking any other language other than that which was assigned
2. Therapist will play with child and provided Non contingent attention and praise for 3 mins
 - a. It is crucial that no demands are placed on the child
 - b. No questions
3. When 3 mins are up therapist will tell the child:
 - a. If you want to play with me, talk to me
4. After the 3 mins are up the therapist will only interact with the child contingent on his/her initiation for 5 mins
5. Prompting schedule – every 30 seconds initiated.
 - a. When the therapist initiates child has 5 seconds to respond. These will be responses
 - b. After it will count as an initiation.
6. The therapist will only engage for 3-5 seconds each time.
 - a. the therapist will engage with the child for 3-5 s by making a statement related to the child's statement or in response to what the child said
 - b. The therapist will respond with a short statement each time.
7. If the child tries to initiate with the therapist in another language other than the one assigned the therapist will say “ I do not understand what you are saying, please try again”
 - a. Make sure the statement is given in the language you have been assigned
8. When the session time is up thank the child for playing with you in the language assigned.
9. These sessions will be recorded and data will be collected during and analyzed afterwards.



RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
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March 6, 2015

Gerardo Castillo, II
ABA-Applied Behavior Analysis
Tampa, FL 33612

RE: Expedited Approval for Initial Review

IRB#: Pro00020118

Title: La Lengua del Oyente: Some Effects of Listener Language on Spanish-Speaking Preschoolers Verbal Behavior

Study Approval Period: 3/6/2015 to 3/6/2016

Dear Dr. Castillo:

On 3/6/2015, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents outlined below.

Approved Item(s):

Protocol Document(s):

[Castillo Proposal IRB.docx](#)

Study involves children and falls under 45 CFR 46.404: Research not involving more than minimal risk.

Consent/Assent Document(s)*:

[Parental Permission and Parent .pdf](#)

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s).

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR

56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kristen Salomon', followed by a horizontal line.

Kristen Salomon, Ph.D., Vice Chairperson
USF Institutional Review Board